

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference 6515.P024PCT | FOR FURTHER ACTION | | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No. PCT/US03/18129 | International filing date (day/month/year) 06 June 2003 (06.06.2003) | Priority date (day/month/year) 07 June 2002 (07.06.2002) | |
| International Patent Classification (IPC) or national classification and IPC IPC(7): H04L 27/01 and US Cl.: 375/232 | | | |
| Applicant GU ET AL | | | |

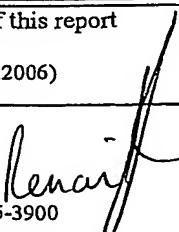
1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of **5** sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of **13** sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

| | |
|--|---|
| Date of submission of the demand 22 December 2003 (22.12.2003) | Date of completion of this report 06 January 2006 (06.01.2006) |
| Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/ US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201 | Authorized officer Kevin Y. Kim Telephone No. 703-305-3900  |

I. Basis of the report**1. With regard to the elements of the international application:***

the international application as originally filed.

the description:
pages 1-25 as originally filed
pages NONE filed with the demand
pages NONE, filed with the letter of _____.

the claims:
pages NONE as originally filed
pages 26-38, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

the drawings:
pages 1-13 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

the sequence listing part of the description:
pages NONE as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
 the language of publication of the international application (under Rule 48.3(b)).
 the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

contained in the international application in printed form.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority in written form.
 furnished subsequently to this Authority in computer readable form.
 The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

the description, pages NONE
 the claims, Nos. 1
 the drawings, sheets/fig NONE

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).
** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application
PCT/US03/18129**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

| | | |
|-------------------------------|---|-----|
| Novelty (N) | Claims <u>Please See Continuation Sheet</u> | YES |
| | Claims <u>Please See Continuation Sheet</u> | NO |
| Inventive Step (IS) | Claims <u>Please See Continuation Sheet</u> | YES |
| | Claims <u>Please See Continuation Sheet</u> | NO |
| Industrial Applicability (IA) | Claims <u>Please See Continuation Sheet</u> | YES |
| | Claims <u>Please See Continuation Sheet</u> | NO |

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application no.
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Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

V.1. Reasoned Statements:

The opinion as to Novelty was positive (Yes) with respect to claims 2,3,6-8,15-24,26,27,30-32,35,36,39-48,50,51,54-72

The opinion as to Novelty was negative (No) with respect to claims 1,4,5,9-14,25,28,29,33,34,37,38,49,52,53

The opinion as to Inventive Step was positive (Yes) with respect to claims 8,17,19-24,32,41,43-48,56-65,67-72

The opinion as to Inventive Step was negative (NO) with respect to claims 1-7,9-16,18,25-31,33-40,42,,49-55,66

The opinion as to Industrial Applicability was positive (YES) with respect to claims 1-72

The opinion as to Industrial Applicability was negative (NO) with respect to claims NONE

Claim 1,4,5,9-14,25,28,29,33,34,37,38,49,52 and 53 lacks novelty under PCT Article 33(2) as being anticipated by Tate et al.

Claims 1, 25 and 49.

Tate et al discloses a method of mitigating spectral leakage in DMT receiver by providing a receiver with a window. See col.6, lines 49-58.

Claims 4,28,37 and 52.

Applying a window is done in time domain. See Figs. 1 and 2. And the DMT receiver includes an FFT for conversion to frequency domain.

Claims 5,29,38 and 53.

Figs. 1 and 2 shows a linear window.

Claims 9, 10,11,12,33 and 34.

It is well established DMT is commonly used over a twisted copper pairs, i.e., conventional telephone lines.

Claim 13.

Applying a window is done in time domain. See Figs. 1 and 2. And the DMT receiver includes an FFT.

Claim 14.

Figs. 1 and 2 shows a linear window.

Claims 2, 3,6,7,15,16,26,27,30,31,35,36,39,40,50,51,54 and 55 and lacks an inventive step under PCT Article 33(3) as being obvious over Tate et al.

Claims 2, 3,26,27,35,36,50 and 51.

Since the maximizing of the bit rate is a main objective of DMT system, it would have been obvious to design the receiver window of Tate et al by maximizing the bit rate for a given communication environment.

Claims 6, 7,15,16,30,31,39,40,54 and 55.

The number of samples for a window is a matter of design choice.

Claims 18,42 and 66 lacks an inventive step under PCT Article 33(3) as being obvious over Tate et al in view of Isaksson et al.

Claims 18,42 and 66.

Tate et al disclose mitigating crosstalk between multiple lines of DMT but for "a Zipper scheme." Isaksson et al teaches the use of a Zipper scheme to utilize all the carriers for either upstream or downstream for increasing data rate (see Abstract) and thus it would have been obvious to use the scheme in Tate et al's DMT system for data rate increase.

Claims 8,17,19-24,32,41,43-48,56-65,67-72 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the claimed subject matter.

Claims 1-72 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made by a person skilled in the art without undue experimentation. Form PCT/IPEA/409 (Continuation Sheet) (July 1998)

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

be made or used in industry.

NEW CITATIONS

US 6,353,636 B1 (TATE et al) 5 March 2002, see Abstract

WO 99/43123 (Isaksson et al) 26 August 1999, see Abstract